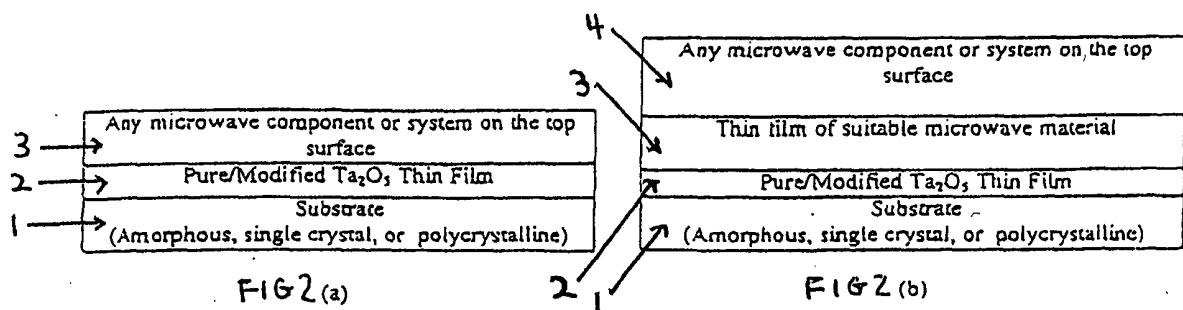


Fig. 1. Flow diagram for the fabrication of pure and modified  $Ta_2O_5$  thin films by the chemical precursor solution technique using alkoxide-salt precursor solution prepared under room temperature conditions.



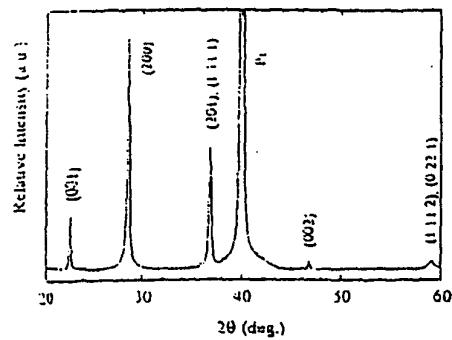


Fig. 3. X-ray diffraction patterns of  $Ta_2O_5$  thin films annealed at 750 °C.

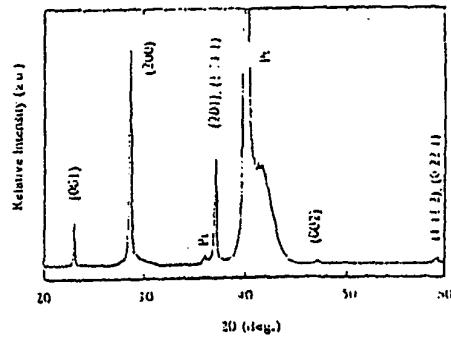


Fig. 4. X-ray diffraction patterns of 0.9 $Ta_2O_5$ -0.1 $Al_2O_3$  thin films annealed at 750 °C.

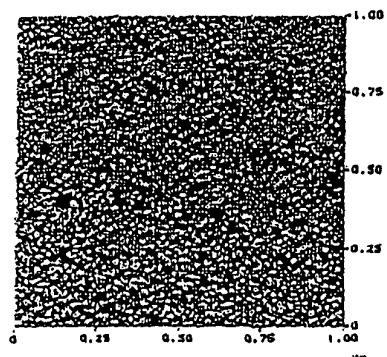


Fig. 5. AFM photograph of 0.9 $Ta_2O_5$ -0.1 $Al_2O_3$  thin films annealed at 750 °C.

0.9 $Ta_2O_5$ -0.1 $Al_2O_3$ Thin Films	
Dielectric Constant	42.8
Dissipation Factor	0.005
Charge Storage Density	18.9 $FC/\mu m^2$ (at 0.5 MV/cm)
Leakage Current	< $10^{-9} A/cm^2$
Density	(at 0.5 MV/cm)
Temperature Coefficient of Capacitance	-20 ppm/°C (range 25-125 °C)
Bias Stability of Capacitance	0.4% (up to 1 MV/cm)

Fig. 6.  
Table I. Enhanced dielectric and insulating properties of 0.9 $Ta_2O_5$ -0.1 $Al_2O_3$  thin films annealed at 750 °C.